



NOTES ON AUSTRALIAN DIPTERA, No. xv.

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(Communicated by I. M. Mackerras.)

(Five Text-figures.)

[Read 25th July, 1928.]

Family **Sapromyzidae**.

TRIGONOMETOPUS (NEOTRIGONOMETOPUS) ALBIBASIS, n. sp.

Female.—Yellowish clay-coloured. Frons grey dusted, with the ocellar spot fuscous, and a faint dark longitudinal central line; occiput grey dusted; aristae fuscous, paler at bases; all cephalic hairs and bristles black. Thorax with four rather faint dark vittae, most evident anteriorly, the outer pair broadest; scutellum and pleura entirely pale testaceous. Abdomen not marked. Legs unicolorous pale testaceous. Wings, including the veins, at bases to just beyond humeral cross-vein and almost to apices of basal cells, white, from that point outward pale brownish hyaline, darker just beyond the white portion, the veins yellowish except at that point where the colour of wing changes. Halteres yellow.

Frons about 1.25 times as long as broad, quite copiously haired on front half and especially on angle between each antenna and eye; ocellar bristles small and fine; both pairs of orbitals long and strong, but not as long as inner pair of verticals, the latter twice as long as outer pair; postocular bristles quite long and strong, continued along cheek below eye, and practically connecting anteriorly with the series of long bristles near lower margin; parafacials narrow, with some microscopic hairs on lower half of inner margin; arista with very short pubescence; third antennal segment rounded at apex. Thorax with 1 + 2 dorso-centrals, a strong pair of prescutellar acrostichals in line with the posterior pair of dorsocentrals; two series of intra-dorsocentral hairs, no presutural present, and the anterior sternopleural very short and fine; scutellum subconvex above, edge thick, with a slight central depression, and four bristles. Legs normal. Wings as in *fuscifrons* Malloch.

Length, 4 mm.

Type, Cairns, N. Queensland, 1907 (Coll. Lichtwardt, Deutsches Ent. Inst.).

From the above species, *fuscifrons* Malloch differs in having the bristles on cheeks much more numerous and weaker, the area between antenna and eye with only one or two fine hairs, the frons deep fuscous except a narrow line on each side posteriorly, the occiput with a large subtriangular blackish mark on each side on upper half which does not extend to margin, the scutellum blackish on central basal portion, and the white area at base of wing falling short of humeral cross-vein and bases of basal cells.

I have, in a paper in the press, erected the subgenus *Neotrigonometopus* for the reception of *fuscifrons* Malloch, distinguishing it from *Trigonometopus* by the fact that the anterior of the three pairs of dorsocentral bristles is in front of the

suture. I have seen no species referable to the subgenus *Trigonometopus* from Australia.

It is incumbent upon me to correct an error in my generic key recently presented in this series of papers. Through a slip the genus *Trigonometopus* is stated to have the anterior orbital bristles incurved and *Paranomina* these bristles recurved. The reverse is the case. From *Paranomina* the species from Australia which I have referred to *Trigonometopus* may be readily distinguished by the presence of a pair of strong presutural dorsocentral bristles, the three pairs in *Paranomina* being all postsutural, and weaker.

HOMONEURA (HOMONEURA) PUBISETA (Kertész).

I have, since sending my paper on the Australian species of *Homoneura* to the press, obtained specimens which I consider belong to this species. All the specimens are males, and the species runs down to caption 10 in my key. There is no dark central spot on any of the tergites, a character which distinguishes it from *gordoni*, and the arista is pubescent only, which distinguishes the species from *indecisa*, in which the arista is plumose. The hypopygium has a long slender heavily chitinized process on each side, evidently the outer forceps, which, when at rest, project almost straight across the venter, crossing each other and lying close against the ventral surface of abdomen. I have included this species in a key to the Oriental species of the genus and have drawn the hypopygia for inclusion in that paper.

Length 3 mm.

Locality.—Palmerston, N. Australia, November, 1908 (Coll. Lichtwardt, Deutsches Ent. Inst.). One specimen sent to Dr. Mackerras for placing in some Australian museum.

HOMONEURA (HOMONEURA) ARMATA Malloch.

In Part x of this series of papers I figured the hypopygium of what I believed to be the male of this species. Since then I have discovered that there are two very closely similar species and that I figured the wrong male. The male with the foliate and serrate edged inner forceps is evidently distinct. The process of the apical tergite, or the superior forceps, consists of two long slender curved spines in *armata*, while in *fergusoni* it consists of one, which is variously dentate or spined at apex. The inner process in *armata* consists of a tapered hook. The apical plates of the female in *armata* are tapered to tips and there more or less blackened.

I have seen this species from Seaford and Ararat, V., and Narrandera and Bourke, N.S.W.

HOMONEURA (HOMONEURA) FERGUSONI, n. sp.

Distinguishable from *armata* by the genital characters in both sexes. Figure 10 in part x of this series of papers is that of *fergusoni* and not *armata*. I find that the apex of superior forceps is quite variable in form here owing to the presence of a number of thorns, and the armature of the inner process is also rather variable, though always pronounced. The apical plates of the female are not blackened at tips and are much wider there than in *armata*.

Length, 6-7 mm.

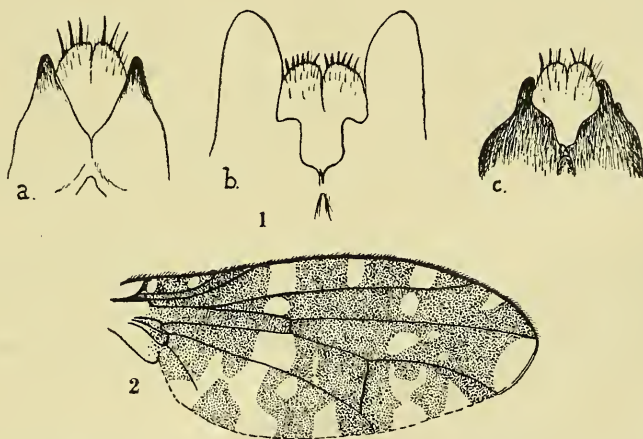
Type, allotype, and 8 paratypes, Narrandera, N.S.W., 25.3.1925-6, 6.5.1926, and 7.10.1925 (E. W. Ferguson).

Named in honour of the late Dr. E. W. Ferguson who collected the material and submitted it to me for identification.

As indicated above the species will run to *armata* in the key in part x, but it is readily distinguished from it and *perthensis* by the yellow genital plates of the female, and the structure of the male hypopygium. The genital plates in the female of *perthensis* are asymmetrical (Text-fig. 1, *b*), those of the other two species are not.

Genus TRYPANEOIDES Tonnoir and Malloch.

This genus contains at present about a dozen Oriental and one New Zealand species, to which total I am now able to add one from Australia. I included it in my generic key in part xiii of this series in the belief that some species of the genus would be discovered in Australia and the characters there cited will serve to distinguish from its allies.



Text-fig. 1.—Genital segments of females; *a*, *Homoneura armata*;
b, *H. ferguson*; *c*, *H. perthensis*.

Text-fig. 2.—*Trypaneoides australis*, n. sp., wing.

TRYPANEOIDES AUSTRALIS, n. sp.

Male.—Head fuscous, ocellar triangle and the frontal orbits grey dusted, the latter with a brown spot at base of the upper bristle; face brownish testaceous, grey dusted, with a faint dark central mark; a brown spot below each eye; occiput and postocular orbits grey dusted; antennae, aristae, and palpi black, third segment of antennae yellowish at base. Thorax and abdomen fuscous, and grey dusted, the former with dark brown marks as follows: a vitta between acrostichals and dorsocentrals from anterior margin to third pair of dorsocentrals which connects with the spot at base of third bristle, a short vitta behind suture laterad of the dorsocentrals, a more irregular vitta over the posthumeral and supra-alar bristles, a spot at base of each hair and bristle, and a broad margin on scutellum; pleura with three oblique brown vittae; abdomen with a brown spot at base of each bristle, very large and confluent at apices of tergites. Legs dull testaceous, femora largely fuscous basally. Wings black, with clear spots (Text-fig. 2). Halteres black.

Frons at vertex wider than long; all bristles strong; arista with its longest hairs about half as long as width of third antennal segment. Thorax with 1 + 3 pairs of acrostichals and dorsocentrals, all strong, and practically no other surface hairs; mesopleura with one discal and one hind marginal bristle; both sternopleurals strong. Apices of tergites with long erect sparse bristles. Fore femur without anteroventral comb; hind femur with a strong anteroventral bristle about one-third from apex.

Length, 2 mm.

Type, Innisfail, Queensland (F. H. Taylor).

Resembles *fenestralis* de Meijere, but that species has the abdomen glossy black.

Family Sciomyzidae.

I have not attempted heretofore, nor yet in the present paper, a revision of the Australian species in this family, having on hand but few specimens referable to it. There is a paper by Dr. A. L. Tonnoir and the writer in the press dealing with the family in New Zealand which may prompt someone to make a study of the group in Australia, and the present is accepted as an opportune time to give a few notes on certain forms in the material now before me. A definition of the family was given in part vi of this series of papers (These PROCEEDINGS, I, 1925, 80).

The family has been divided into three subfamilies. The Tetanurinae, with a cylindrical ovipositor, and seven abdominal segments in female, and the arista subapical, occur only in Europe as far as known now. The other two, in which the ovipositor is not strongly developed, the abdominal segments beyond fifth are more or less telescoped, and the arista is near base of third antennal segment, are almost cosmopolitan. The Sciomyzinae are distinguished from the Tetanocerinae by the presence of a distinct propleural bristle.

The Tetanocerinae are divided into several tribes, representatives of one of which are before me now.

Tribe Sepedonini.

This tribe is distinguished by the presence of but two scutellar bristles, the lack of a humeral bristle except in *Neosepedon*, and usually the elongated hind femora.

There are three genera recognized in the tribe, *Thecomyia* Perty, *Sepedon* Latreille, and *Dichaetophora* Rondani. A careful examination of material from various regions convinces me that it is advisable to recognize some groups of species as subgenera.

Key to the Genera.

1. The vertical area above bases of hind coxae and below base of abdomen as heavily chitinated as pleura, not depressed; metapleural callus bare; ocellar bristles lacking; none of the femora much thickened, all of them spinose below at apices; arista plumose *Thecomyia* Perty (*longicornis* Perty)
- The vertical area between bases of hind coxae and base of abdomen membranous, and more or less depressed; arista short haired 2
2. Metapleural callus haired *Sepedon* Latreille
- Metapleural callus without hairs *Dichaetophora* Rondani

Genus SEPEDON Latreille.

It is evident to me that this genus as represented by the material before me is susceptible to subdivision into at least two subgenera. One of the subgenera is

restricted to the group to which the genotype, *sphegeus* Fabricius, belongs, the other contains several American species. As the matter does not bear directly upon the Australian species I am not proposing a new name for the second segregate herein. I have seen no Australian species of either segregate.

Genus DICHÆTOPHORA Rondani.

The Australian species before me belong to this genus but do not agree in all particulars with typical species thereof. I consequently propose to erect a new subgenus for their reception, basing its definition as in the following synopsis.

Synopsis of Subgenera.

- A. Ocellar bristles present but small; humeral bristle present; second antennal segment not longer than third, the latter narrowed beyond insertion of arista, its apex bluntly rounded; fore and hind femora thicker than mid pair, and spinose below; first wing vein extending beyond inner cross-vein . . . Subgenus *Neosepedon*, nov.
- AA. Ocellar bristles lacking; humeral bristle lacking; second antennal segment much longer than third, the latter pointed at apex; hind femur much thicker than mid and fore pairs, and more strongly spinose below; first wing vein ending proximad of inner cross-vein . . . Subgenus *Dichætophora* Rondani

Subgenus NEOSEPEDON, nov.

I place in this subgenus two Australian species and cite as the genotype, the first included species, *punctipennis*, n. sp.

The description and comparative notes should serve to distinguish the species.

DICHÆTOPHORA (NEOSEPEDON) PUNCTIPENNIS, n. sp.

Male.—Head testaceous yellow; frons fulvous, ocellar spot and a mark against each eye near upper margin black, central glossy stripe brown; orbits narrowly white dusted on outer edge anteriorly; a dark mark between each antenna and eye; face, and especially the parafacials, densely whitish dusted; antennae brown, third segment fuscous apically; arista yellow; palpi testaceous yellow. Thorax brownish testaceous, with grey dust, the dorsum with two narrow submedian and two broad sublateral reddish-brown vittae; scutellum reddish-brown, grey dusted on sides; pleura with a brownish vitta on upper margin. Abdomen shining brownish testaceous, with posterior lateral angles of tergites grey dusted, sixth tergite grey dusted, with a pair of large shining reddish-brown discal spots. Legs testaceous yellow, apices of femora faintly, and of tibiae distinctly, infuscated, apex of third and all of fourth and fifth tarsal segments fuscous. Wings greyish hyaline, with numerous small fuscous dots, 6-8 in the cell in front of second vein beginning below apex of auxiliary vein and extending to apex of second, about three along lower side of apical section of second vein and one on costa between apex of that vein and apex of third, about ten arranged alternately on apical section of third vein, four above and six below, about the same number on apical two sections of fourth vein, and about six on fifth vein along discal cell, the spots all touching the veins.

Frons at vertex half of the head width, central glossy vitta depressed and complete; postverticals and both pairs of verticals quite long and strong; orbital represented by a short hair; second segment of antenna parallel-sided, slightly shorter than third, the latter slightly and gradually narrowed from insertion of arista to apex, the latter rounded; arista about as long as antenna, pubescent; face carinate above, slightly receding below, and with some microscopic black hairs on lower half of sides; cheek about half as high as eye, the latter slightly higher than long. Thorax

with one humeral, two notopleural, one supra-alar, two postalar, and one pair of dorsocentral, bristles; mesonotum and disc of scutellum with short hairs; mesopleura, sternopleura, centre of hypopleura and pteropleura, lower part of propleura, and the prosternal plate, with microscopic black hairs. Fore and hind femora thicker than mid pair and with short stout spines on apical half of antero-ventral and posteroventral surfaces; mid femora unarmed below. Inner cross-vein close to middle of discal cell; first posterior cell slightly narrowed at apex; outer cross-vein bent outward at middle.

Length, 6 mm., exclusive of antennae.

Type and one paratype, Botany Bay, N.S.W. (H. Petersen).

This and the next species were sent to me by the late Dr. C. F. Baker of the Philippine College of Agriculture.

DICHAETOPHORA (NEOSEPEDON) CONJUNCTA, n. sp.

A specimen in poor condition differs from the foregoing in having no evident dark spot between each antenna and eye, and the wings with the dark spots along veins connected across the cells, those in apical portions of submarginal, and discal cells, and all of those in first posterior cell, furthermore connected by means of a longitudinal dark streak in centre of cells, leaving in these sections only small round clear spots along the side of each of the veins. The dark colour in the anal and second posterior cells is also in the form of clouds and there are similar small hyaline spots along the lower sides of the veins as is the case in the others just mentioned.

Length, 6 mm.

Type, Botany Bay, N.S.W. (H. Petersen).

It is possible, but hardly probable, that this is a variety of *punctipennis*, but the specimen has been badly eaten by some pest and the antennae and abdomen are lacking, so that it is impossible to determine even the sex of the specimen.

Both of these species will be sent to Dr. Mackerras so that they may be deposited in some suitable Australian museum where they may be available to anyone desiring to make a study of the family.

Subfamily SCIOMYZINAE.

The members of this subfamily are distinguished from Tetanocerinae by the presence of a distinct propleural bristle immediately above fore coxa.

I have seen two genera from Australia.

Genus HELOSCIOMYZA Hendel.

This genus is readily distinguished from any other in the family by the very prominent bristles on the costal vein. It is confined to Australia and New Zealand.

There are two Australian species known to me which are referable here. One of these is the genotype, already briefly described by me in this series of papers, and a new one which is closely related to one occurring in New Zealand. They may be distinguished as below.

A. Pteropleura bare *ferruginea* Hendel
 A.A. Pteropleura setulose centrally *aliena*, n. sp.

HELOSCIOMYZA ALIENA, n. sp.

Male and female.—Head testaceous yellow, cheeks, frontal orbits and occiput, white dusted, ocellar region and a central vitta extending beyond middle of frons,

a mark at base of outer vertical bristle, and another on middle of occiput behind each eye, dark brown; antennae reddish testaceous, third segment fuscous above and at apex; arista fuscous; palpi testaceous. Thorax testaceous, densely whitish-grey dusted, dorsum with four brown vittae, the median pair fused posteriorly and continued over disc of scutellum, the sublateral pair divided by a narrow longitudinal line behind suture; pleura brown below humeral callus. Abdomen brownish testaceous, paler at apices, darker at bases, of tergites. Legs testaceous, femora darker, fore pair grey dusted, apices of hind pair, and of hind tibiae, and apical three segments of all tarsi, blackish. Wings greyish hyaline, cross-veins slightly clouded. Halteres yellow.

Anterior orbital about half as long as posterior one, rather close to it, and not much proximad of middle of frons; anterior portion of frons sparsely black-haired; face with a slight vertical carina; cheek about as high as width of third antennal segment, sparsely haired on lower half; arista pubescent. Thorax as in *ferruginea*, with two pairs of strong postsutural dorsocentrals; propleura with one strong bristle, the stigmal bristle also present but very short; pteropleura setulose; anterior sternopleural bristle shorter than posterior one. Male with a pair of leaf-like processes at apex of hypopygium. Legs stouter in male than in female. First posterior cell of wing not narrowed at apex.

Length, 4.5 mm.

Type, male, and allotype, Broken Hill and Sydney, N.S.W., 9.6.25.

A smaller, darker, and more slender, species than *ferruginea*, from which it may yet be distinguished at least subgenerically.

Genus *MELINA* Robineau-Desvoidy.

I have one species before me which is referable here. Hendel uses the generic name *Graphomyzina* Macquart for the group to which it appears most readily referable, but Cresson has placed the genus as a subgenus of *Melina*. Hendel uses the genus name *Sciomyza* instead of *Melina*, basing his contention upon the refutation of the claim that Westwood actually fixed types in his 1840 paper. Most authors accept Westwood's paper as fixing types and if it is so accepted then *Melina* ought to be accorded the right to stand as the name for the present genus.

Melina, as accepted herein, is distinguished from *Helosciomyza* by the lack of long bristles on the costa. The pteropleura is setulose, the arista long haired, the fore tibia has but one preapical dorsal bristle, and the inner cross-vein is beyond the middle of discal cell of wing.

The eyes are elongate and longer than high in the only species before me, thus placing it in the subgenus *Graphomyzina*, the true *Melina* species having the eyes round, or higher than long.

I have but one specimen of this species before me and, in the hope that it may be possible for me to obtain more material in the family later, I defer describing it until such time as my collection will permit a more thorough survey of the Australian forms.

Family **Borboridae.**

Genus *LEPTOCERA* Olivier.

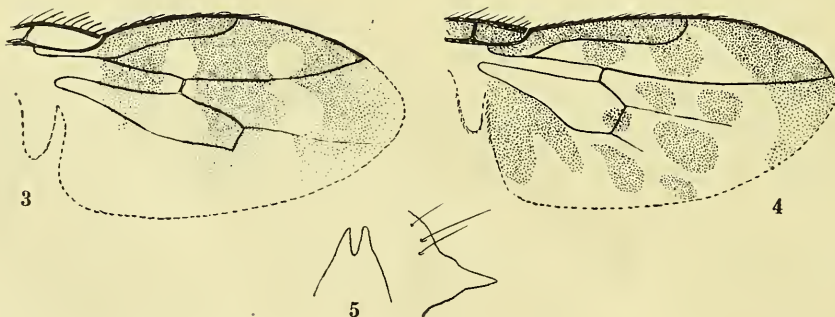
This genus has been divided into a large number of subgenera by Dr. O. Duda, the two species dealt with herein being referable to *Collinella* Duda.

LEPTOCERA (COLLINELLA) TRIFASCIGERA, n. sp.

Female.—Head dark brown, anterior margin of frons, centre of cheeks, palpi, and most of antennae, testaceous yellow. Thorax shining black, slightly grey dusted and with a faint dark central vitta on dorsum, notopleural margin and sutures of pleura yellowish. Abdomen with the dorsum unicolorous black, slightly grey dusted. Legs fuscous, knee-joints, a median band on each tibia, bases of fore tibiae, bases of fore tarsi, and all of mid and hind tarsi, fulvous yellow. Wings faintly infuscated at bases, with a rather pronounced median fascia, and a fainter one at apex, both darkest on the third vein (Text-fig. 3). Halteres yellow.

Frons strongly bristled, the ocellars long; antennae porrect, divergent, third antennal segment rounded; arista slender, distinctly short haired, and almost as long as mesonotum; one long vibrissa on each side. Lower humeral bristle downwardly directed, upper one and scapular bristle directed mesad; three pairs of postsutural dorsocentrals, becoming shorter and more widely separated anteriorly; surface hairs quite strong, about eight series between the anterior dorsocentrals; sternopleural bristle long; scutellum flat and bare above, with four long and two short (intermediate) bristles. First visible tergite as long as next two together, second about half as long as third, and subequal to fourth, the bristles fine and short. Mid tibia with two anterodorsal and two posterodorsal bristles and a ventral one near apex; basal segment of hind tarsus slightly thicker and about half as long as second. Venation as in Text-fig. 3.

Length, 1.5 mm.



Text-fig. 3.—*Leptocera trifascigera*, wing.

Text-fig. 4.—*Leptocera myrmecophila*, wing.

Text-fig. 5.—*Atherigona bidentata*, apical abdominal process of male from above and the side.

Type, Mt. Molloy, Queensland (F. H. Taylor).

This species has the wings very similar to those of *subtinicipennis* Brunetti, which occurs in India, Formosa, and some of the islands in the Indian Ocean, but that species has eight scutellar bristles. *L. myrmecophila* Knab and Malloch has the wings as Text-fig. 4.

Family Muscidae.

ATHERIGONA BIDENTATA, n. sp.

Male.—Head fuscous, occiput, frontal triangle, and orbits, face, and cheeks densely yellowish-grey dusted; lower portion of face testaceous; antennae, aristae, and palpi black, aristae slightly paler basally, interfrontalia dark brown. Thorax

fuscous, densely grey dusted, humeral angles and propleura yellowish, dorsum with three faint brown vittae. Abdomen fulvous yellow, more or less obscured on dorsum with grey dust basally, first three visible tergites each with a pair of black spots, very large on second, smallest on third, and on these tergites an additional faint central brownish vitta, fourth tergite and hypopygium yellow. Legs honey-yellow, apical third of fore femora and tibiae, and basal three segments of fore tarsi blackened. Wings clear, with a faint dark streak at apex of auxiliary vein. Calyptrae and halteres white.

Head of the usual form; third antennal segment long, and rather broad; arista densely pubescent, the second segment longer than thick; palpi short, and dilated at apices as in *varia* Meigen. Thorax normal; some setulae besides the three bristles on sternopleura. Abdomen slightly tapered to apex, none of the tergites excessively enlarged, the hypopygial process as Text-fig. 5. Fore femur not excavated above, with at least one preapical posteroventral bristle; fore tibia without exceptional armature; fore tarsus exceeding in length the tibia by about the extent of apical two segments, slender, and without exceptional hairing. Inner cross-vein but little before middle of discal cell, penultimate section of fourth vein about two-thirds as long as ultimate, first posterior cell very slightly narrowed at apex, outer cross-vein erect, at less than its own length from apex of fifth vein.

Female.—Similar to male, but the abdomen not so sharply marked and with a pair of small dark spots on fourth tergite, the fore legs except coxae and knee-joints black, mid and hind tarsi and hind tibiae except bases fuscous.

Length, 3.5 mm.

Type, male, allotype, and 4 female paratypes, Bellavista, Papua, 4,600 feet (D. M. Stewart).

Genus LIMNINA, nov.

This genus is closely related to *Limnophora* Robineau-Desvoidy, but is distinguished from it by the presence of some setulae near middle of under surface of the auxiliary vein, some microscopic hairs on base of stem vein below, and hairs on sides of scutellum which invade the ventral surface to some extent. There are several other characters which I mention in the specific description that may be of generic import, but I omit mention of these as generic criteria, lest by so doing I engender the erection of additional genera for species yet unknown to me which might differ in some of these less important characters and yet agree in the essential features already cited.

Genotype, the following species.

LIMNINA ELONGATA, n. sp.

Male.—Black, with pale grey dusting on head, thorax, and abdomen. Head with silvery dust on frontal orbits and parafacials, interfrontalia velvety black when seen from behind. Thorax fuscous on disc, the lateral margins pale grey dusted, and the areas between the five blackish vittae less distinctly pale dusted, the vittae not conspicuous; disc of scutellum and upper margin of pleura fuscous, remainder of pleura blue-grey dusted. Abdomen with a pair of large deep black opaque spots on each of basal three tergites, those on second and third very narrowly separated in middle and covering almost all of dorsum, fourth with a pair of dark submedian lines and a dark apex. Legs black. Wings slightly smoky. Calyptrae white. Halteres yellow.

Frons at vertex about one-fifth of the head width, orbits linear above, widened in front, interfrontalia of uniform width throughout, frontal orbital bristles rubbed off in type, but apparently all weak; arista very short haired; parafacial linear in profile; vibrissal angle hardly produced. Thorax with 2 + 3 pairs of dorsocentrals, the anterior intra-alar lacking, and very few fine surface hairs, the presutural acrostichal area with three series of hairs; sternopleurals 1 + 2. Abdomen elongate, tapered to apex, fifth sternite about twice as long as fourth, projecting beyond apex of hypopygium, transverse at apex, and with a small central wedge-shaped notch in centre. Fore tibia without a median posterior bristle; mid tibia with one median posterior bristle; hind femur with a preapical anteroventral bristle; hind tibia with one anteroventral and one anterodorsal median bristle. Inner cross-vein at one-third from apex of discal cell; fourth vein but slightly bent forward apically; third vein setulose at base both above and below.

Length, 5 mm.

Type, Bellavista, Papua, 4,600 feet (D. M. Stewart).

This specimen as well as those collected by Mr. Taylor recorded in this paper were sent to me by Dr. A. H. Baldwin of the Australian Institute of Tropical Medicine, and the types will be returned to him for disposition in Australia.

Genus *LIMNELLA*, nov.

This genus is erected for the reception of *Limnophora orthoneura* Malloch and is distinguished from *Limnophora* by the presence of short setulose hairs on the upper surface of the first vein. The eyes of the males are widely separated above, which is very rarely the case in *Limnophora*, and never the case in *Myiographa* Malloch which latter has the first vein setulose above also. In *Limnella* the fourth vein is not at all forwardly curved, while in *Myiographa* it is very conspicuously curved forward.

At present I have referred but one species to this genus, though it is probable that more will be discovered in the Australian region.

Family Calliphoridae.

Genus *MELINDA* Robineau-Desvoidy.

There is before me one species which I refer to this genus. It closely resembles the European *polita* Macquart, and is about the same size.

MELINDA MINUTA, n. sp.

Male and female.—General colour aeneous black, the whole slightly grey dusted and distinctly shining, mesonotum with four narrow black vittae, the submedian pair continued a little behind suture, the lateral pair broken in front of suture and wider there than behind it. Abdomen metallic greenish-black, with white dust, the dorsum with a faint narrow dark central vitta. Legs black. Wings greyish hyaline. Calyptrae whitish. Halteres yellow.

Eyes bare; narrowest part of frons about 1.5 times as wide as third antennal segment; parafacial as wide as third antennal segment, haired on upper half; facial ridges setulose on lower halves; third antennal segment fully twice as long as second; arista plumose on basal half or more; vibrissal angle slightly produced; cheek fully twice as high as width of parafacial. Thorax with 2 + 3 dorsocentrals, 2 + 2 or 3 acrostichals, the posterior one of the sublateral bristles lacking, and the anterior one microscopic or absent. Abdomen narrowly ovate, bristles on apices of

third and fourth visible tergites, and on middle of fourth well developed; sternal hairs setulose and moderately numerous. Leg bristles as in *Calliphora* species. Inner cross-vein a little beyond apex of first vein and about two-fifths from apex of discal cell; outer cross-vein close to midway between inner and bend of fourth; first posterior cell closed, and with a short petiole.

Female.—Frons at vertex a little less than one-third of the head width, widened to one-third at anterior margin. Thorax more greenish than in male and with the median vittae more noticeably continued to behind suture, the postsutural acrostichals in type five in number. Abdomen broader than in male, and with slight evidences of checkering in the dusting. Tibiae a little brownish. Inner cross-vein a little closer to middle of discal cell, outer a little beyond midway from inner to bend of fourth.

Length, 3.5-4 mm.

Type, male, and allotype, Como, N.S.W., December, 1923, swept from flowers (H. Petersen).

The male of *polita* which I have examined has the frons narrower than the above species, and the second abdominal tergite with a pair of strong bristles on middle of hind margin, and another pair on disc of third segment.

The above description was inadvertently omitted from the paper on this family recently published by the writer though written at the same time as the others which appeared therein.

Genus HUTTONOBESSERIA Curran.

In a paper recently published by Mr. H. C. Curran in Europe this genus is erected for the reception of the species described by the late Capt. Hutton under the name *Gymnophania pernix*.

I have had an opportunity of examining a specimen of this species and find that it belongs to the Calliphoridae, and not to Tachinidae where both Hutton and Curran have placed it. The lack of a developed postscutellum inevitably prevents it from being considered as referable to Tachinidae, and though the arista is pubescent only, it is without question close to *Melinda*.

It is a glossy black species with black legs and, being without setulae on the posterior side of the stem vein above, falls into the segregate above indicated, but the lack of long arisal hairs readily distinguishes it from any related genus occurring in Australia.

So far as known at present the species occurs only in New Zealand.

Genus PAUROTHIRIX Bezzi.

This genus was erected for the reception of two Samoan species. It has much the appearance of *Melinda*, but one of the species has a few hairs on the supra-squamal ridge; the other lacks these. The upper part of the parafacials is bare and so also is the disc of lower calypter. The posterior sublateral bristle is absent, a character which distinguishes it from *Luciliella* Malloch.

I have seen only females sent to me by Dr. Buxton for examination.

Family Tachinidae.

Tribe Amenini.

When I wrote my previous paper dealing with this tribe I did not have before me the genus *Paramenia* Brauer and von Bergenstamm, but subsequently I had an opportunity to examine it in the United States National Museum. The principal

characters distinguishing it from *Amenia* and *Stilbomyia* are the non-carinate face, and the bare prosternum and central portion of propleura. The anterior post-humeral bristle is also slightly mesad of the posterior one.

The three genera may be separated as below. *Microtropeza* Macquart is still unknown to me. If it belongs to the tribe Ameniini it may be distinguished from the others by the non-carinate face, and the bare arista, as well as its less evident metallic coloration.

Key to the Genera.

1. Face not carinate; prosternum and central portion of propleura bare
 *Paramenia* Brauer and Bergenstamm
 Face conspicuously vertically carinate in middle; prosternum and central portion of
 propleura haired 2
2. Frons of male much narrower than that of female, and without strong forwardly
 directed supra-orbital bristles; height of cheek always decidedly greater than
 length of antenna *Amenia* Robineau-Desvoidy
 Frons of male not narrower than that of female, and in both sexes with two or more
 strong forwardly directed supra-orbital bristles *Stilbomyia* Macquart

Genus *PARAMENIA* Brauer and Bergenstamm.

This genus is the same as *Calliphoropsis* Townsend, and the genotype, *semi-auriceps* B. and B., is the same as *Musca macularis* Walker, the genotype of *Calliphoropsis*, as identified by Townsend.

Paramenia agrees in the structure of the postscutellum with the other two genera included in the tribe by me, and has the abdominal sternites quite broadly exposed at apices, broadly V-shaped. It has even more evidences of relationship to the Calliphoridae than have the other two genera, the head being quite similar to that of some species of *Calliphora*, except that the parafacials are bare. The anterior posthumeral bristle is slightly mesad of the posterior one, and the inner cross-vein of the wing is below a point about midway between apices of auxiliary and first veins.

PARAMENIA MACULARIS (Walker).

This is the only species known to belong to the genus. It has the frontal orbits and upper half of parafacials white dusted, the lower half of parafacial and the entire cheeks golden yellow dusted; antennae black; palpi fuscous. Thorax and abdomen deep metallic blue, with violet reflections, the former whitish dusted, most densely so on notopleural and supra-alar regions, and with a large white dusted spot on the mesopleura and another on the sternopleura; abdomen with a conspicuous white dusted spot on each side of second tergite, and an even larger one on each side of fourth; wings darkened at bases; calyptres black, whitish at bases.

Arista plumose; face not carinate; each orbit with two strong forwardly directed supra-orbital bristles in female. Thorax with 2 + 3 dorsocentral bristles, presutural acrostichals rather inconspicuous, prescutellar pair strong. Strong bristles present only on apices of third and fourth abdominal tergites, apex of latter transverse. Fore tibia with some short anterodorsal bristles basally.

Length, 11-15 mm.

Locality.—Buderim Mt., Queensland.

Tribe **Rutillini**.

When I wrote my previous paper, already referred to, I had available only the specimens in the collection of the United States National Museum, but I have

now had an opportunity to examine the species in the collection of the Deutsches Entomologisches Institut, through the kindness of Dr. Walther Horn, and I am thus able to present data upon many species previously unknown to me.

Genus *RUTILLA* Robineau-Desvoidy.

A very careful examination of all the species now before me shows that the prosternal plate is not invariably bare. In some species it is absolutely devoid of hairs, in some others it is apparently so, but there are some hairs on the membranous region surrounding the anterior portion of the plate and these appear so at times that they seem slightly to invade the latter, while in a few species the hairs actually are situated upon the lateral margins of the plate as well as on the contiguous membranous region.

Below I present a synopsis of the 16 species now available to me, including therein a number of those submitted by Dr. Horn, and as these were used by Dr. Engel in his recent work on the group there is a great probability that the identifications are correct, except in one or two cases which are dealt with in the notes on the species involved.

Key to the species.

1. Hind tibia with one or two prominent bristles and no uniform fringe of closely placed regular short bristles on anterodorsal surface 2
 Hind tibia with a fringe of closely placed, quite regular, short bristles on the antero-dorsal surface, and very rarely one of these bristles beyond middle slightly longer than the others 3
2. Thoracic dorsum metallic blue-green, with four black vittae, the areas between the vittae in front of suture white dusted, and in addition with the following conspicuous white dusted markings: presutural lateral margins, a spot between these and the presutural white vitta just in front of suture, a larger one in line with it behind suture, and an elongate spot on each side of median line near posterior margin; abdomen of male brownish-yellow, coppery at apex, with a black dorsocentral vitta, and blackish apices to tergites, the most evident white dust being on sides of second tergite and a submedian mark on each side of third segment; abdomen of female blackish-green, the black and white markings as in male, but more extensive, and the fourth tergite conspicuously white dusted on sides *leucosticta* Schiner
 Thoracic dorsum brownish fuscous, with slight whitish dusting, which is nowhere disposed in spots, and four dark vittae anteriorly; abdomen brownish-yellow, greenish apically, with a dark dorsocentral vitta and dark apices to tergites *vivipara* (Fabricius)
3. Distance from mouth margin to apex of third antennal segment not more than three-fourths as great as length of that segment *inornata* Guérin
 Distance from mouth margin to apex of third antennal segment distinctly greater than length of that segment 4
4. Face, cheeks, parafacials, and frontal orbits, brownish or fuscous, rarely testaceous, and pale grey dusted 5
 Face, at least the anterior and upper portions of cheeks, and the parafacials, testaceous yellow, or orange-yellow, with bright yellow, and not grey, dust .. 12
5. Length averaging 20 mm. or more; thorax dark metallic blue-green, with quite distinct white dusting, the dorsum with four slender black vittae anteriorly; abdomen bright metallic green, with a central vitta and apices of tergites 2 and 3 black, the green portions of these two tergites with white dust when seen from behind; parafacials haired to about midway from base of antennae to lower margin of eyes; pleural hairs all black; wings hyaline, with a black fascia near bases *regalis* Guérin
 Length averaging less than 20 mm.; thorax and abdomen not coloured as above .. 6
6. Thorax and abdomen similarly coloured on dorsum, uniform deep metallic blue-green, very like some of the large species of Lucilini, the thorax with slight dust and very faint traces of four blackish dorsal vittae, the abdomen with a

- faint blackish dorsocentral vitta and even fainter dark apices to tergites 1 to 3; wings greyish hyaline, with a dark fascia near base, and all the veins narrowly margined with dark brown; no outstanding bristle on vibrissal angle; pleural hairs entirely black; calyptrae fuscous, darker on the margins; parafacials not haired below middle of eyes Samoan species
- Thorax and abdomen usually dissimilarly coloured, or neither uniformly dark metallic blue-green; the wing veins either without a trace of dark clouding, or if there is any such present it is very faint and yellowish 7
7. Pleural hairs all black or fuscous 8
- Pleural hairs mostly or entirely pale, yellowish 9
8. Thorax black, the dorsum with a coppery tinge, abdomen nowhere brilliant metallic blue or blue-green *viridinigra* Macquart.
- Thorax and abdomen brilliant metallic blue-green or green, with distinct black markings 13
9. Prosternum absolutely devoid of hairs both close against the anterior lateral margins of the chitinized plate and on the two large lateral subvertical anterior membranous areas; species about 18 mm. in length; general colouration of thorax and abdomen brownish testaceous, the thorax almost fuscous and without any metallic sheen, mesonotum rather densely grey dusted and with four quite distinct dark vittae; one quite prominent bristle amongst those on vibrissal angle; parafacial hairs not descending below level of second antennal segment *desvoidyi* Guérin.
- Prosternum with hairs either on the region along each anterior lateral margin of the chitinized plate or on the two large lateral subvertical anterior membranous areas, in the latter case the hairs are fine, pale and adherent to the surface so that they are visible only when the head is pressed upward well clear of the anterior margin of the thorax; species not more than 16 mm. in length; the thorax always more or less evidently metallic green or blue-green on dorsum .. 10
10. Some conspicuous long bristly hairs on prosternum contiguous to anterior lateral margins of the chitinized plate, none on the large subvertical anterior membranous areas; one moderately well developed bristle amongst the finer series on each vibrissal angle; legs fuscous; dorsum of thorax quite evidently metallic green, the surface whitish dusted, and rather faintly quadrivittate; scutellum testaceous; abdomen in both sexes testaceous or brownish-yellow, with a dark dorsocentral vitta and, at least in the female, with a faint dark apex to each tergite, fourth tergite in male with, in female without, a metallic green tinge; dorsum of thorax very largely white haired in front of suture, and entirely black haired behind it *pellucens* Macquart?
- The prosternal hairs very fine and almost entirely decumbent, confined to the two large anterior subvertical lateral membranous areas; dorsum of thorax with black hairs both in front of and behind suture 11
11. One of the bristles on each vibrissal angle quite noticeably longer than the others; thorax quite brilliantly metallic green or blue-green, with whitish dust and four dark vittae on dorsum; scutellum concolorous with mesonotum; legs fuscous; abdomen testaceous or brownish testaceous, with a black dorsocentral vitta and apices to tergites, the surface coppery or golden tinged, and apex of fourth tergite in both sexes brilliant metallic green *lepida* Guérin
- None of the bristles on vibrissal angles outstandingly developed; thorax not very conspicuously green, the scutellum usually more or less noticeably testaceous, and paler than mesonotum; abdomen in male rather inconspicuously greenish tinged, in female without green colour, legs testaceous or tawny yellow Samoan species
12. Pleural hairs nearly all bright golden-yellow; thorax bright metallic green or blue-green, without white dusted spots on dorsum or pleura; fourth abdominal tergite of female not impressed at apex in centre; raised portions of the cheeks opalescent green; parafacials haired to lowest level of the eyes *formosa* Robineau-Desvoidy
- Pleural hairs all black or fuscous 13
13. Thorax violet-black, metallic bluish on the posterior margin and scutellum, with a white-dusted blue-tinged spot on each humerus and another on each side behind suture on mesonotum, pleura with only one white spot, on mesopleura; abdomen concolorous with thorax, second and third tergites each with a transverse series of four small round white-dusted blue-tinged spots, and fourth with

- a pair of much larger similarly coloured marks; the black sub-basal fascia on wing as dark from beyond humeral vein to base of wing in costal cell as at any other portion; both calyptreae white at bases, blackish at apices; hairs on anterior third of frontal orbits, the parafacials, and cheeks, golden-yellow, prosternal hairs strong and black *argentifera* Bigot
- Thorax largely metallic blue or green on disc, if violet-black then with two presutural green vittae; the abdomen never with four small round white-dusted spots on second and third tergites, the outer pale mark always transverse when there is a small submedian pale spot on each side of median line 14
14. All hairs on frontal orbits, parafacials, and cheeks, dark, either black or fuscous. those on parafacials quite dense and conspicuous, continued broadly to lower level of eye, the three portions mentioned with more or less dense grey dusting, especially noticeable in the female, the face, parafacials, and anterior half of cheeks, testaceous yellow; thoracic dorsum metallic blue or blue-green, with four black vittae, the submedian pair extending to or slightly beyond suture, the sub-lateral pair a little broader and complete when seen from certain angles; abdomen brilliant metallic green, with a complete, rather broad, dorsocentral black vitta and black apical margins to the tergites except fourth, the latter extended forward at a little distance from the central vitta in male, and on third tergite usually reaching anterior margin, leaving a small submedian green spot as in *splendida* *imperialis* Guérin
- All hairs on cheeks and all, or almost all, of those on parafacials golden-yellow, all or most of those on frontal orbits dark in colour 15
15. Dorsum of thorax absolutely without distinct white dusting except an inconspicuous patch on each humerus 16
- Dorsum of thorax quite conspicuously white dusted, with two or more pale spots on each lateral margin 17
16. Humeral angles rather inconspicuously, but quite evidently white dusted when seen from behind; mesopleura also faintly white dusted centrally; sub-basal dark mark on wing black and conspicuous, continued along costa to base of wing *nitens* Walker?
- Humeral angles and centre of mesopleura not at all white dusted; sub-basal dark mark on wing brownish and inconspicuous Ceylon species
17. Dorsum of thorax mostly shining black, with two narrow submedian presutural vittae, and four spots on each lateral margin, green, and white dusted when seen from behind *erichsoni* Engel
- Dorsum of thorax mostly metallic blue or blue-green, with four shining black vittae, the intervening areas white dusted in female when seen from behind, the submedian dark vittae not complete; lateral margins of mesonotum each with four white-dusted spots, the pair at suture sometimes very faint .. *splendida* Donovan

In the case of species included in my previous paper which appear to require no further elucidation, I do not add to what I have already published, but the species which are not included in that paper are dealt with herein to a greater or less extent in order that they may be rendered recognizable to students of the group.

I have listed in the key two species from Samoa which will be dealt with in a paper on the Diptera of Samoa, and also one species from Ceylon sent to me by Dr. W. Horn, which I am unable to identify at this time. I merely introduce these species in the key to indicate specific characters which may serve to distinguish also some of the Australian species as yet unknown to me.

RUTILIA VIVIPARA (Fabricius).

The specimen I accept as *vivipara* has some hairs on prosternum close to anterior margin of the plate. The pleural hairs are yellow except the pteropleural tuft and those on disc of mesopleura. The parafacial is haired to opposite apex of second antennal segment.

RUTILIA REGALIS Guérin.

The largest species of the genus I have seen. It is very dark metallic blue or blue-green on dorsum of thorax and abdomen, the former is whitish dusted but without conspicuous lateral white spots, and has four dark vittae, the submedian pair discontinued at or just behind the suture; the abdomen has a narrow black dorsocentral vitta and black apices to the tergites, broadest apically. The head is black, with whitish dust, and the hairs are black except those on occiput, which are white. Pleural hairs black; anterior spiracle pale brown.

Parafacials haired almost to lower margin of eye; antennae short, about half as long as height of cheek. Two or three pairs of short acrostichals before suture; hind margin of mesonotum with about eight bristles; prosternum haired in front of anterior margin of plate; scutellum flattened above, subtriangular, with about 18 bristles. Sometimes one or two short bristles at apex of second visible tergite centrally. Hind tibia with a regular anterodorsal fringe of short bristles.

Length, 20-22 mm.

Queensland and New South Wales.

I have examined specimens identified by Dr. Engel, and some in the United States National Museum which were identified as *formosa* by Coquillett and, as that species, used as the genotype of *Chrysorutilia* by Townsend. The species is a true *Rutilia*.

RUTILIA VIRIDINIGRA Macquart.

I am accepting as this species the one identified as such by Engel, a female specimen of which I have before me. It is quite similar to the preceding one, but is smaller in size, averaging less than 18 mm. in length, and is darker in colour, the thorax especially being less noticeably metallic green, and the scutellum more brownish. The mesonotum is less strongly bristled than in *regalis*, with but one pair of weak presutural acrostichals, and the scutellum has fewer bristles (14).

Three specimens identified as *desvoidyi* in the United States National Museum (one by Bigot) were accepted as correct by me when I wrote my previous paper. These differ from the specimen identified by Engel in being more pronouncedly green, and in having the abdomen, especially in the male, largely translucent brownish at bases of the tergites.

RUTILIA DESVOIDYI Guérin.

I am accepting as *desvoidyi* the female before me so identified by Engel. There are three similar specimens in the United States National Museum, one of them with a rather noticeable bristle in the anterodorsal series of setulae on hind tibia.

There is some doubt as to the correctness of Engel's identification of this species as he confused with it the male of a species of the genus *Formosia*, which rather closely resembles it in colour. I shall deal with this genus later.

RUTILIA LEUCOSTICTA Schiner.

A very pretty species, with the thorax marked as in *splendida* except that there are two white-dusted spots on hind margin of the mesonotum. The male and female before me present a striking difference in the colour of the abdomen, the former having it largely brownish testaceous, with a broad dorsocentral vitta and narrow apices to the tergites black, while the female has the ground colour coppery or greenish, and the black portions much more extensive, the third tergite being black, with a pair of small submedian white dusted spots, and the

fourth tergite black, with the sides very broadly white dusted. The two white-dusted pleural spots are very conspicuous. The face and cheeks are yellow, densely golden yellow dusted, and with yellow hairs.

The hairs on the parafacial in the male descend sparsely almost to lower level of eye, but in the female they are invisible below level of apex of second antennal segment. The scutellum is slightly convex on disc and there are, besides the six or eight marginal bristles, four to six other weaker bristles slightly anterior to them.

The specimens before me are from New South Wales.

RUTILIA PELLUCENS Macquart.

Some specimens doubtfully referred here resemble small examples of *desvoidyi*, but the thoracic dorsum is more greenish than in that species, the base of costa is more evidently produced forward, or humped out, and in the characters cited in key it differs also.

Length, 12-14 mm.

Locality, Cairns, N. Queensland (J. F. Illingworth).

RUTILIA LEPIDA Guérin.

This species has much the appearance of *formosa*, but the head is brownish, with whitish-grey dust on cheeks, parafacials, and frontal orbits, and dark hairs on the two last, as well as on a portion of the mesopleura.

I have seen only Queensland specimens.

RUTILIA IMPERIALIS Guérin.

This species rather closely resembles *splendida*, but may be readily separated by the characters listed in the foregoing key.

I have seen only specimens from New South Wales.

RUTILIA NITENS Walker.

A small species belonging to the *splendida* group, the identity of which is in doubt.